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ABSTRACT

This paper reviews the use of different audio-visual media in distance education, including terrestrial broadcasting, cable satellite, videocassettes, audiocassettes, telephone teaching, viewdata, teletext, microcomputers, and interactive video. Trends in distance education are also summarized and related to trends in media technology development. It is concluded that these media technology developments will provide greater choice of media to be used, greater diversity of access, a move towards low cost media, greater student control, and a convergence of media, with implications for professional training and knowledge needed by teachers/designers in distance education. (Author/EW)

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Overview of the Use of Media in Distance Education

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Abstract

This paper reviews the use of different audio-visual media in distance education, including terrestrial broadcasting, cable and satellite, video-cassettes, audio-cassettes, telephone teaching, viewdata and teletext, micro-computers, and interactive video. The paper also includes a summary of trends in distance education, and relates them to trends in media technology development. The paper concludes with some major implications for distance teaching institutions. Paper numbers 221 and 222 develop further some of the issues in this paper.

OVERVIEW OF THE USE OF MEDIA IN DISTANCE EDUCATION

Introduction

Asked to give World overview:

Definition of a UNESCO expert: someone who flies over a country and writes a report on it.

Danger of generalising from one country to another: major cultural differences.

Example:

> "A US survey undertaken by Action for Children's Television asked children whether they would prefer to keep their father or their TV set; nearly half of them opted for TV."

Another example:

> "American TV current affairs programming has acquired a devoted following among gorillas and orang-outangs at the National Zoo in Washington DC. A select group of inmates has been sharing a 12 in. portable television for several years now. The Zoo claims that television is kept on for most of the day because the animals enjoy it. Audience reaction is reported to be restrained and attentive."

I'm sure that Norwegian children would not swap their father for a TV set, nor because apes enjoy watching TV in America can we assume that human beings will enjoy watching it in Norway!

But there is a serious point behind this. Technology has a fascination, an attraction, which is independent of the messages it transmits. In what follows, we must remember that we are concerned with effectively teaching human beings. Technology does not necessarily mean that teaching becomes mechanical, isolated and inhuman; indeed it can help increase personal interaction. But technology means that the role of the teacher becomes even more important, since it must be the teacher that controls the technology, not the reverse.

Why Use Media?

This leads to my first major point. Why do we need to use media in distance education?

Get the most difficult/abstract bit over first.

Bad reason first:

1. The technological imperative. Because it's there! TV must be used; satellites must be used. Silly but powerful reason: lots of examples.
   - exception: can initiate worthwhile projects which would not otherwise have been funded.

Good reasons:

1. Distribution: means of getting materials to learners who are separated from teachers. Mail turn round can be three weeks; some media can be instant.

   - access: get to students in their homes (or at local centres).

   - recrutiment: attract students to distance study.

2. Pedagogic reasons: isolated student working at home, without a personal tutor immediately available:

   - variety:

     use of several media allows knowledge to be presented in different ways: same knowledge presented differently
     motivation: makes study more interesting than just reading.

   - development of different learning skills

     knowledge constant across media but skills - how students use knowledge - affected by medium

     SKILLS: comprehension; analysis: application; generalisation. Some media are better than others for different learning skills - we will see in what follows.

Trends in Distance Education

Before looking at trends in media, must look at trends in distance education.

15 years ago

1. OU: large (85,000 students; 150 courses)
   state-financed
   autonomous
   expensive (K600million)

   multi-media: uses texts
   broadcasting
   computers

2. Educational broadcasting

3. Correspondence education: (e.g. NKS)
   relatively small
   autonomous
   relatively cheap
   private (with or without State support)
   emphasis on text and correspondence tutoring

4. Extension services of conventional institutions: (e.g. University of Wisconsin, U.S.A.) AND Sweden.
   very small
   subordinate to campus teaching
   very cheap
   use of travelling tutors /correspondence

Since then

1. Small, autonomous open unviersities.
   Athabasca University, Canada:
   7000 students
   primarily print
   telephone tutoring
   cassettes
   with some cable TV
   correspondence tutoring.

because of no's: low-cost.

2. Expansion of "single medium" institutions to other media.

Broadcasting organisations becoming multi-media.

e.g. BBC language courses

- TV
- Radio
- Cassettes/discs
- Text books

BUT Don't provide TUITION: not TWO-WAY communication.

3. Co-operative ventures

NFU	Broadcasting organisation
"Start"	Adult education organisation
Knowledge Network	Correspondence schools

4. Continuing Education

Single initatives at vocational/professional levels

- Open Tech
- OU/CE
- Self-financing

Media in Distance Education

1. In the last 15 years, major developments in media.

2. New "distance teaching" institutions were smaller; could not use so easily mass-media such as broadcasting.

Going to look at the range of media now available and being used by distance education institutions throughout the world.

Broadcasting

Many people believe that broadcasting and distance education are synonymous. They are wrong.

Distance education based on two-way communication -

many D.E.S. without broadcasting

much EB not two-way.

Only TWO of the 14 autonomous OU's use broadcasting extensively.

British OU
Chinese Central Television University } 35 hours a week

2 more: Téléuniversité and Athabasca use 9-12 hours a week, but mainly on cable

Remaining 10 - no or nominal use.

Even in USA, where local broadcasting more prevalent, only 35 colleges, consortia, or TV stations using broadcast TV for post-secondary education in 1982.

Reasons for lack of use:

(a) broadcasting organisations are autonomous; they have their own plans for education, often in direct competition with those of a DLS. Frankly, they are difficult to work with - they do their own thing.

(b) low numbers: few DLS with more than 50,000 students; nos per course may be very low (150-200 up to 5,000) - of no interest to national broadcasting sytems.

(c) related: transmission problems - not quantity but quality - unsuitable times for distance learners, can't guarantee high viewing rate, consequently becomes peripheral.

(d) costs: did a study three years ago: four ways of costing:

i. marketing costs
ii. total costs
iii. marginal costs
iv. free service
v. the Norwegian way.

Broadcasters control the costing system: DLS must take it or leave it. Actual costs less of a problem.

(e) academic ignorance.

Great pity - since broadcasting has great potential for d.e

OU: 800,000 viewers - better than breakfast TV or channel 4!.

Cable and Satellite

Brief word: Satellite: ideal for national distribution: but satellite channels are limited in Europe, and commercial considerations seem to be paramount: 5 DBS stations per country in Europe - not likely for DLS unless government regulation.

North America: situation different: because of land-mass, and only 2 countries - 70 DBS channels for USA and 50 for Canada!.

Knowledge Network - teaching functions.

Cable more potential for European DLS, especially for conventional institutions - not for national institutions though: UK: less than 50% homes by end of century.

Again though dependent on multiplicity of channels, and commerical considerations: if spare channel capacity and you can provide local programmes, O.K.

Video Cassettes

More likely to be of value for DLS

International figures

Rapidly growing - but some experts believe that this will level off in three years time, due to economic conditions.

So far, in UK, ownership not linked to occupational level.

Several DLS use VC's to back-up broadcasts: send copies of broadcasts to local centres.

Others don't use broadcasting, but send VC's to local centres.

Video-cassetees have great potential for DLS for following reasons:

(a) can be physically distributed: costs OU £2 per 25 minutes programme per student (distribution only) - not dependent on transmission time.

(b) production costs can be much lower than for broadcasting (20,000Kr. to 200,000 Kr - compared with 350,000 Kr. for broadcasting)

(c) can commission from non-broadcast agencies (e.g. Universities).

(d) only pay for what you use - so good for small numbers, specific uses.

(e) more effective educationally than broadcasts (tomorrow)

Main drawback: most homes don't have them yet - but can be found now in most local centres - e.g. Norway grunnskoler.

Audio-cassettes

Little used in D.E. except at OU - elsewhere, generally for recording lectures. Deal with this topic more fully tommorrow; all for now to say is:

> Audio-cassettes combined with print is the most powerful and cost-effective distance teaching medium.

It has been totally unexploited by most DLS.

Telephone Teaching

Telephone teaching has been much more extensively used in DLS. It's advantage is that it can provide immediate two-way communication between student and tutor.

Telephone can be used:

- via shared public telephone system
- via "dedicated" lines rented from telephone organisation
- sound only
- accompanied by visual pictures (slow scan, TV, telewriting, CYCLOPS)
- one-to-one, home/home
- one to several, using loud-speaking telephone
- several simultaneously, using a conference bridge.

In terms of teaching functions, it can be used in a variety of ways:

1. All (or nearly all) instruction by telephone from a central point to many sites, with loud-speaking telephone, via dedicated network (e.g. University of Wisconsin) - limited interaction possible.

2. "Eavesdropping" - campus lectures "overheard" via telephone at distance points.

3. Roughly equal mix of correspondence materials and group teleconferences.

4. Mainly correspondence, with tutorial support via telephone (e.g. Open University).

5. Television/radio programme with "live" telephone questions from students (e.g. Knowledge Network)

6. "Dial-a-tutor": remote students call their tutor (or vice-versa) with specific problems (e.g. Athabasca University).

Use depends on nature of teaching: professional up-dating (where knowledge-base of students is substantial) can be entirely by telephone; where knowledge to be acquired is substantial, telephone better for "trouble-shooting" problems encountered in other media.

Costs depends on who bears them: student or institution. Teleconferencing can be very expensive if borne by institutions, especially in Norway where tariffs are high.

U.K. has cheapest, except for local calls; Canada/USA have free local calls but high trunk calls.

Viewdata and Telextext

"Pages" of text or diagrams can be transmitted electronically, via the telephone (PRESTEL, in U.K.; ANTIOPE in France; TELIDON in Canada) or via television (CEEFAX; ORACLE); have as yet limited educational benefits, because

1. Less than 10% of homes in Britain have access to these systems
2. No sound
3. Limited amount of information (especially TV)
4. Limited interaction
5. Awkward structuring of learning materials
6. High cost (for telephone systems).

Micro-computers and Main-Frame Computers

CAL is not very heavily used in distance education yet, although development of low-cost and increasingly "user-friendly" microcomputers offers tremendous potential for distance education.

CAL at the moment is not used very much in distance education, for several reasons:

1. Mainframe computers: have to use local terminals: problems of access by students (sharing, etc.)

2. "Popular" micros have inadequate capacity for sophisticated CAL programmes.

3. Home access still in minority, with many (incompatible) models.

4. Incompatible machines, using different languages.

5. Main problem: VERY high cost of creating teaching materials: 1,000 Kr. per hour per student in programming time.

Things are changing as micros get cheaper and more powerful, they are becoming increasingly capable of use as "teaching machines", with easily created teaching materials prepared without sophisticated programming skills being necessary. Lower costs will also lead to greater home ownership - but still five years away.

Computers very heavily used for student records, fee administration, course allocation AND for testing and feedback:

e.g. CADE (Hermods, Sweden).
TV Ontario (TV Academy - gives individualised comments)
Open University (CMA's)

Interactive Video

Combines the two most expensive media: television and computers.

BUT: also combines rich delivery system with rich means of interaction.

Two main forms:

1. microcomputers + video-cassette machines
   - micro controls video-player, selects sequences, gives students tests
   - cost: £1500 (15000Kr)

2) video-discs: 56,000 still frames
   non-destructible
   immediate access
   computer-control
   - cost: £1000 - but production cost.

Uses: more sophistifcated CAL -
simulation and skills training:
data-base

Text

Remains most important medium because of its flexibility and familiarity

BUT: print costs rising; costs of electronic media are falling; word-processors can help reduce costs, but cannot avoid the need for good graphical and educational design: which means people.

Implications of Media Developement

1. Choice is widening and becoming more difficult - wider range of media now available in home, and increasing rapidly. More opportunities for home-learning: more difficulties for designers of distance teaching material - need to identify more clearly strengths and weaknesses, as follows:

1. Accessibility - can all students use it?
2. Teaching functions - what can it do that other media can't?
3. Ease of production - can teacher do it alone?
4. Costs of production and distribution - how much?
5. Student convenience and cost - do students like it? Can they afford it?

2. Greater Diversity of Access:

Everyone has broadcast TV; radio; mail service. But if:

75% telephone
50% VCR
40% Cable TV
33% micro-computer
10% video-disc

Difficult for course designers - social equity a real issue.

3. Move towards low-cost media

	MACHINE	DELIVERY OF SOFTWARE (30 mins)
Audio-cassettes:	100 Kr.	2.5 Kr.
Microcomputers:	1000 Kr.	100 Kr.
Video-cassette:	4000 Kr.	200 Kr.
Video-disc	4000 Kr.	100 Kr.

Electronic media getting cheaper.

4. Greater student control

Probably most important factor: students can control new media easier than broadcasting, and can interact more flexibly than with text.

5. Media are Converging

Telephone, TV, computers, are all converging together - with major implications for professional training and the knowledge needed by teachers/designers in distance teaching.

New media offer tremendous potential for distance education - and tremendous challenges.